IN THE CLAIMS

1. (Newly Amended) A method for adjusting data modulation in a wireless communication system, the method comprising:

receiving data at a transmitter for transmission to a receiver;

formatting the received data into packets for transmission to the receiver, each packet having a particular encoding/data modulation;

transmitting the packets to the receiver;

receiving the packets at the receiver;

A1 for each received packet, generating and transmitting an acknowledgment at the physical layer using a fast feedback channel, if the received packet has an acceptable error rate;

retransmitting that received packet at the transmitter, if an acknowledgment for that packet is not received;

collecting retransmission statistics; and

adjusting each particular encoding/data modulation using the collected retransmission statistics; wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation.

2. (Original) The method of claim 1 wherein the particular encoding/data modulation is forward error correction (FEC) encoding/data modulation.

3. (Original) The method of claim 2 wherein the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the particular FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set.

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4. (Original) The method of claim 1 wherein the packets are transmitted using a single carrier with frequency domain equalization (SC-FDE) air interface.

5. (Original) The method of claim 1 wherein the acknowledgments are transmitted on the fast feedback channel using a code division multiple access (CDMA) air interface.

6. (Original) The method of claim 1 further comprising at the receiver for each received packet transmitting a negative acknowledgment, if that packet has an unacceptable error rate.

7. (Newly Amended) A physical layer automatic request repeat system

comprising:

a transmitter having:

a physical layer transmitter for receiving data, formatting the received data into packets, each packet having a particular encoding/data modulation, transmitting the packets, and retransmitting packets in response to not receiving a corresponding acknowledgment for a given packet;

an ACK receiver for receiving the corresponding acknowledgment; and

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an adaptive modulation and coding (AMC) controller for collecting retransmission statistics and adjusting the particular data modulations using the collected statistics; wherein if the collected retransmission statistics indicate a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicate a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation; and

a receiver having:

a physical layer receiver for demodulating the packets;

a hybrid ARQ combiner/decoder for buffering, decoding and detecting packet errors; and

an acknowledgment transmitter for transmitting an acknowledgment for each packet, if that packet has an acceptable error rate.

8. (Original) The system of claim 7 wherein the particular encoding/data modulation is forward error correction (FEC) encoding/data modulation.

9. (Original) The system of claim 8 wherein the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the particular FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set.

10. (Original) The system of claim 7 wherein the packets are transmitted using a single carrier with frequency domain equalization (SC-FDE) air interface.

11. (Original) The method of claim 7 wherein the acknowledgments are transmitted on a fast feedback channel using a code division multiple access (CDMA) air interface.

12. (Original) The system of claim 7 further comprising at the receiver transmitting a negative acknowledgment, if any packet has an unacceptable error rate.

13. (Newly Amended) A physical automatic request repeat system comprising:

a transmitter having:

means for receiving data;

means for formatting the received data into packets for transmission to the receiver, each packet having a particular encoding/data modulation;

means for transmitting the packets to a receiver;

means for retransmitting one of the packets, if an acknowledgment for that packet is not received;

means for collecting retransmission statistics; and

means for adjusting each particular data modulation using the collected retransmission statistics; wherein if the collected retransmission statistics indicated a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicated a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation; and

a receiver having:

means for receiving the packets; and

means for each received packet, for decoding and error checking the received packet, and for generating and transmitting an acknowledgment at the physical layer, if that received packet has an acceptable error rate.

14. (Original) The system of claim 13 wherein the particular encoding/data

modulation is a particular forward error correction (FEC) encoding/data modulation.

15. (Original) The system of claim 13 wherein the packets are transmitted using an orthogonal frequency division multiple access (OFDMA) air interface and the particular FEC encoding/data modulation adjusting is performed in addition to selective nulling of subchannels in an OFDMA set.

16. (Original) The system of claim 13 wherein the packets are transmitted using a single carrier with frequency domain equalization (SC-FDE) air interface.

17. (Newly Amended) The ~~method~~ system of claim 13 wherein the acknowledgments are transmitted on a fast feedback channel using a code division multiple access (CDMA) air interface.

18. (Original) The system of claim 13 further comprising at the receiver for each received packet, transmitting a negative acknowledgment, if that packet has an unacceptable error rate.

19. (Newly Amended) A communication system employing broadband fixed wireless access comprising:

a sequencer having a queue for receiving data blocks from the network for sequentially conveying packets to n transmitters;

~~said~~ a destination device having n receivers, each associated with one of said n transmitters;

n hybrid ARQ decoders each coupled with one of said n receivers;

said n transmitters subsequently transmitting to their associated n receivers through a data channel;

said n hybrid ARQ decoders having a feedback channel for transmitting acknowledgments to their associated transmitters for controlling retransmission and providing an acknowledge signal to its associated transmitter when an acceptable error rate packet has been received; and

said n hybrid ARQ decoders releasing packets which have an acceptable error rate; and

wherein the communication system collecting retransmission statistics and adjusting a particular encoding/data modulation for each of the N transmitter using the collected retransmission statistics; if the collected retransmission statistics indicated a low number of retransmissions, a higher capacity encoding/data modulation scheme is selected as the particular encoding/data modulation and if the collected retransmission statistics indicated a high number of retransmissions, a lower capacity encoding/data modulation scheme is selected as the particular encoding/data modulation.

20. (Original) The communication system of claim 19 wherein said n signal transmitters each temporarily store a packet that has been transmitted in a buffer memory; and

one of said n transmitters receiving an acknowledge signal from an associated hybrid decoder clearing the stored packet in readiness for receipt of another block.

21. (Original) The communication system of claim 19 wherein said n transmitters each temporarily store a packet that has been transmitted in a buffer memory; and

one of said n transmitters failing to receive an acknowledge signal from its associated decoder retransmits the packet temporarily stored in its buffer memory.

22. (Original) The system of claim 19 wherein one of said n transmitters clears its buffer memory if an acknowledge signal is not received from its associated decoder after a maximum number of retransmissions.

23. (Newly Amended) The system of claim 19 wherein ~~the~~ a maximum number ~~or~~ of retransmissions is an operator defined integer having a range from 1 to 8.

24. (Original) The system of claim 19 wherein one of said n receivers requiring

a retransmission combines a retransmitted packet with an original transmitted packet to facilitate error correction.

25. (Original) The system of claim 19 wherein a transmitter failing to receive an acknowledge signal from an associated decoder encodes the packet employing a different encoding technique from an encoding technique employed in an original transmission of that packet.

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26. (Original) The system of claim 19 wherein the n transmitters employs Turbo coding and the decoder employs code combining of an original transmission and a retransmission to facilitate error correction.

27. (Original) The system of claim 19 wherein one of said n transmitters are incorporated in a base station and said n receivers are incorporated in a subscriber unit.

28. (Newly Amended) The system of claim 19 wherein said n ~~transmitter~~ transmitters are incorporated in a subscriber unit and said n receivers are incorporated in a base station.

29. (Original) The system of claim 19 wherein packets are transmitted using an

orthogonal frequency division multiple access (OFDMA) air interface in which frequency subchannels in an OFDMA set may be selectively nulled.

30. (Original) The system of claim 19 wherein the packets are transmitted using a single carrier with frequency domain equalization (SC-FDE) air interface.

31. (Original) The method of claim 19 wherein the acknowledgments are transmitted on a fast feedback channel using a code division multiple access (CDMA) air interface.